DOCUMENT RESUME

ED 391 038 CE 070 610

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TITLE Learning Style, Brain Modality, and Teaching Preferences of Incarcerated Females at the Pocatello Women's Correctional Center.
PUB DATE 4 Dec 95
NOTE 14p.; Paper presented at the American Vocational Association Convention (Denver, CO, December 4, 1995). Research funded by the Idaho Commission on Women's Programs.
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Adult Education; *Adult Learning; *Brain Hemisphere Functions; *Cognitive Style; Correctional Institutions; Educational Research; Females; *Prisoners; Student Attitudes; *Teaching Methods
IDENTIFIERS *Pocatello Womens Correctional Center ID

ABSTRACT

A study identified the learning style preferences and brain hemisphericity of female inmates at the Pocatello Women's Correctional Center in Pocatello, Idaho. It also identified teaching methodologies to which inmates were exposed while in a learning environment as well as preferred teaching methods. Data were gathered by the Learning Type Measure to determine preferred learning style, the Hemispheric Mode Indicator to determine brain hemisphericity, and the Q-Sort method to identify teaching method preferences. Participants also provided information regarding teaching methods to which they were exposed most during their education. Sixty-three inmates volunteered to participate. Hands-on classes were the obvious preference in teaching methods. The majority of the participants were right brain (56 percent) and were type one and type four learners (64 percent). Implications from these findings were as follows: hands-on type classes should be a point of focus for the institution where the study took place and should become a strong consideration for other similar institutions; kinesthetic/tactile activities should be considered as having great value and be included in curriculum; and much attention should be given to lesson development that is kinesthetic/tactile in nature. (Appendixes include methodology task list, demographic information questions, and Q-Sort recording sheet.) (YLB)

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Learning Style, Brain Modality, and Teaching Preferences of Incarcerated Females at the Pocatello Women's Correctional Center

A Research Project
presented to the

American Vocational Association
Annual Conference
Denver, Colorado

December 4, 1995

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Research Funded by the
Idaho Commission on Women's Programs
Boise, Idaho

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INTRODUCTION

Expanding research in the fields of Learning Styles and Brain Hemisphericity has provided much needed information for classroom teachers. Bernice McCarthy's 4MAT system of teaching to the whole brain suggests that only 30% of students are being taught in their preferred learning style. A question that surfaces, in light of developing information on how people learn, is, have we been inadvertently ignoring students in the learning environment?

Indeed, if the traditional classroom has been ignoring students, many students may have been wrongfully identified as learning disabled or, at worse, unteachable. As reported at the American Vocational Association (AVA) conference by Marshall (1994), Marie Carbo (1986), a national reading styles authority has said that "85 percent of troubled readers have a right-brain processing style and tactile/kinesthetic learning strengths." It is abundantly clear that the traditional classroom predominantly addresses left-brain processing and reflective learning strengths.

Helene Hodges (1994), Director of Research for the Association for Supervision and Curriculum Development (ASCD) has concluded that "88 percent of all dropouts have strong tactile abilities and 99 percent have strong kinesthetic abilities." Again, this describes information processing that has not been properly addressed in the traditional classroom.

In her thesis abstract, Lisoskie (1989) states "A great percent of high school teaching is through lecture, discussion, and objective testing to the left hemisphere. Research shows, however, that many students are operating at least part of the time in the right hemisphere mode when they process information. In addition to auditory processing, these students need to receive information visually and kinesthetically." Using a system of teaching that addressed the four learning styles and both the right and left brain modes, her experiment of teaching Biology commenced. "The result of the investigation shows that students taught with the

4MAT System, when tested objectively, score an average of ten points higher than existing scores. Students subjectively rated the teaching methods better and stated that they enjoyed the subject more."

There is strong evidence that addressing individual learning styles and hemispheric mode processing preferences has a positive effect on learning. Provided with this evidence one may conclude that many students have failed to recognize academic success through no fault of their own. What happens to those students who drop out of school? Worse yet, what happens to those students who are told by the "system" that they are not as capable as others?

Perhaps research by Marshall and Johns (1992) can answer these questions. "Learning style research reveals the following groups of students have global (right hemispheric style) and tactile/kinesthetic learning strengths: `at-risk' students, slowly or poorly achieving students, dropouts, alternative school students, incarcerated learning disabled adults." They often end up in some form of an alternative learning situation that further isolates them and reduces self-esteem, or worse, behind bars.

The research conducted in this study identified the learning style preferences and brain hemisphericity of female inmates at the Pocatello Women's Correctional Center (PWCC), in Pocatello, Idaho. Furthermore, this study identified teaching methodologies inmates were exposed to while in a learning environment themselves, as well as preferred teaching methods.

Two hypotheses were stated, hypothesis number one is based on the research finding of Hodges (1994). As a significant number of dropouts have strong tactile (88%) and strong kinesthetic (99%) abilities, and that traditional educational methodology does not focus on this type of learning, addressing these learners while in school may reduce their failure to understand the learning content and thus being less prepared to function in society.

Hypothesis number two stated that there would be an inverse relationship between the teaching methods the participants were exposed to while in school and their preferences in teaching methods. Tables 4, 5,

6, and 7 address this relationship. In the kinesthetic/tactile group this proved to be true without exception. In the overall participant ratings this proved to be true for four out of five methods.

METHODOLOGY

In order to gather the necessary data for this study numerous activities were employed. The Learning Type Measure (LTM) was used to determine preferred learning style for the participants. Brain hemisphericity was determined using the Hemispheric Mode Indicator (HMI). The LTM test validity was determined comparing the Learning Type Measure against the Learning Style Indicator. Using a Chi-Square test for validity, significance was determined at the $p>.0001$ level. Table 1 provides reliability information. In addition to the LTM and HMI, data were gathered about teaching method preferences using the Q-Sort method. Participants were also asked to provide information regarding teaching methods they were exposed to most during their education.

TABLE 1

LTM Test Reliability N=63

SCALE	CRONBACH ALPHA
Type one	0.853
Type two	0.835
Type three	0.767
Type four	0.885
Do vs. Watch	0.863

A total of sixty-three inmates volunteered to participate in this research project. Table 2 provides the break-out of the various learning styles and brain hemisphericity of the participants.

TABLE 2

Learning Styles and Brain Hemisphericity
of Research Participants N=63

LEARNING STYLE	HEMISPHERICITY
Type one = 23	Whole Brain = 9
Type two = 6	Left Brain = 19
Type three = 17	Right Brain = 35
Type four = 17	

Participants were provided instruction in the use of the LTM and HMI by project researchers and were asked to complete each instrument. Participants were allowed to keep the instruments after the data were recorded. Questions clarifying each instrument were entertained by project researchers. Because of institutional requirements, groups were restricted in size and according to security classifications. After completing the LTM and HMI participants were then asked to identify the five major teaching methods that they were exposed to while in school. A list of thirty-six methods were provided for their use. This list was obtained through research into teaching methods/strategies and was adjudicated by a panel of six educational practitioners.

The results of this exercise are reported in Table 3. It should be noted that the original sample size was N=63 and that one participant dropped out of the study before it was completed. Therefore, the remaining tables will reflect a sample with an N=62. This part of the study looked at the sample as a whole as well as those identified through the LTM and HMI as being right-brain, tactile/kinesthetic learners.

TABLE 3

Instructional Methods Experienced
In School N=62

METHOD	RANK ORDER
Textbooks	1
Chalk/white boards	2
Reading	3
Work sheets	4
Pencil/paper	5

Dr. Bernice McCarthy, EXCEL, Inc., (personal communications, July 13, 1995) has stated that it is hypothesized that type three and four learners with active processing preferences are kinesthetic/tactile learners. Twenty-one percent (N=13) of the sample in this research were identified as being right-brain, kinesthetic/tactile learners. The importance of determining those participants in this category lies at the heart of this research. Their data are reported in Tables 6 and 7.

According to Carbo (1986), Director of the National Reading Styles Center, "85 percent of troubled readers have right-brain processing style and tactile/kinesthetic learning strengths." This research determined that 92 % of the right-brain tactile/kinesthetic learners participating in the study did not include "reading" as a preferred means of being instructed. Yet, 77 % identified "reading" as one of the top five methods used while they were being taught.

Following the first and second data gathering activities LTM, HMI, and five teaching methods exposed to while in a learning environment, the participants were then asked to sort through thirty-six cards, each identifying a teaching method. The sorting process was to determine teaching method preferences as they related to how each participant would prefer to be taught. The Q-Sort method of data collection was used

for this activity. The Q-Sort recording sheet appears in appendix C.

The Q-Sort method of collecting data utilizes a forced evaluation, is based on a normal curve, and results in a rank order of preferences. Thirty-six teaching methods were identified for use with the Q-Sort. The adjudicated listing of thirty-six teaching methods appears as an appendix to this report. Results of this activity are reported in Tables 4, 5, 6, and 7.

TABLE 4

Instructional Methods Experienced
In School N=62

METHOD	RANK ORDER
Textbooks	1
Chalk/white boards	2
Reading	3
Work sheets	4
Pencil/paper	5

TABLE 5

Instructional Methods Preferred N=62

METHOD	RANK ORDER
On-the-job training	1
Demonstration	2
Reading	3
Field trip	4
Experiments	5

TABLE 6

Instructional Methods Experienced
In School N=13

METHOD	RANK ORDER
Textbooks	1
Reading	2
Chalk/white board	3
Work sheets	4
Handouts	5

TABLE 7

Instructional Methods Preferred N=13

METHOD	RANK ORDER
On-the-job training	1
Field trip	2
Demonstration	3
Experiments	4
Role playing	5

SUMMARY

A flaw in the research design was in the gathering of demographic information. Participants were asked, in one question, to identify their education status. Those who graduated from high school were grouped with those who completed the GED. As a result, the researchers were

unable to distinguish the two from each other and no accurate record of dropouts exists. The demographic data gathering form is included in the appendix. The result of this error was that the study was unable to duplicate the findings of Hodges' research.

The research found that 31% of those participants identified as kinesthetic/tactile learners did not complete high school or a GED. Had the two categories been separated it may have been determined that a higher number had dropped out but later completed the GED.

One thing was clear, there is a mismatch between what was used as content delivery methods and what is preferred. Unfortunately, it is not always possible to accommodate every persons preferences, and this research is not intended to suggest such a thought. However, relating to incarcerated individuals, how can they best be accommodated to facilitate optimal learning?

Hands-on type classes appear to be the obvious preference in teaching methods. Therefore, the researchers would suggest that this should be a point of focus for the institution where the study took place, and should become a strong consideration for other similar institutions. Kinesthetic/tactile activities should also be looked at as having a great value and be considered when developing curriculum.

As the majority of the participants were right-brain (56%), and as the majority were type one and type four learners (64%), it was recommended that much attention be given to lesson development that is kinesthetic/tactile in nature. A thorough understanding of a learning styles approach to teaching would greatly facilitate such lesson development.

In an effort to accommodate a learning styles approach it was further recommended that the institution, and this could be extrapolated to other similar institutions, actively seek to develop those skills in at least one education staff member. Although this would be a minimal effort, it would allow for a beginning. With one trained person others could be mentored.

APPENDIX A

METHODOLOGY TASK LIST

1. Group Discussion
2. Peer Tutoring
3. Intern Tutoring
4. Research Papers
5. Games
6. Flash Cards
7. Demonstration
8. Chalk/White Board
9. Computer Interaction Systems
10. Textbooks
11. Bulletin Boards
12. Experiments
13. Laboratory Work
14. Audio Tapes
15. Group Activities
16. Lecture
17. Work Sheets
18. Flip Charts
19. Motion Picture Films
20. Filmstrips
21. Video/Television
22. Reading
23. Role Playing
24. Guest Speakers
25. Handouts
26. Simulation
27. Slide Projection
28. Overhead Projection
29. Models/Replica
30. On-the-Job Training
31. Pencil and Paper
32. Case Study
33. Interviewing
34. maps
35. Individualized Instruction
36. Field Trip

APPENDIX B

DEMOGRAPHIC INFORMATION QUESTIONS

How do you describe yourself?

___ American Indian or Alaskan Native
___ Black or African American
___ Mexican, Mexican American or Chicano
___ Asian, Asian American or Pacific Islander
___ Puerto Rican
___ Other Hispanic or Latin American
___ White (Non-Hispanic)
___ Other: _____

Highest Grade Level Completed

___ 8th grade or less
___ 9th grade
___ 10th grade
___ 11th grade
___ High School Equivalent/ GED Equivalent
___ Post High School College
___ Post High School Vocational Training
___ Associate Degree (2 years of college)
___ Bachelor's Degree (4 years of College)

Age

___ 16-20
___ 21-25
___ 26-30
___ 31-35
___ 41+

Favorite Subject

When I was enrolled in school my favorite subject was ___
_____

School Experience

My school experience was mostly:

___ Academic (College Prep)
___ Vocational
___ General

School Location

The majority of my schooling took place in the State/Territory of:

_____

APPENDIX C

Q-SORT RECORDING SHEET

AREA I (++)		AREA II (+)		AREA III (-)		AREA IV (--)	
Rank	Trait Number	Rank	Trait Number	Rank	Trait Number	Rank	Trait Number
1	_____	10	_____	19	_____	28	_____
2	_____	11	_____	20	_____	29	_____
3	_____	12	_____	21	_____	30	_____
4	_____	13	_____	22	_____	31	_____
5	_____	14	_____	23	_____	32	_____
6	_____	15	_____	24	_____	33	_____
7	_____	16	_____	25	_____	34	_____
8	_____	17	_____	26	_____	35	_____
9	_____	18	_____	27	_____	36	_____

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